Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules	)	GN Docket No. 12-354
With regard to Commercial Operations in	)	
The 3550-3650 MHz Band	)	

COMMENTS OF NEPTUNO NETWORKS

NEPTUNO MEDIA, INC. D/B/A NEPTUNO NETWORKS

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To: The Commission

REPLY COMMENTS OF NEPTUNO NETWORKS

Neptuno Media, Inc. d/b/a Neptuno Networks ("Neptuno"), by its attorneys, hereby replies to comments submitted in the record established by the Federal Communications Commission's ("Commission") Notice of Proposed Rulemaking FCC 12-148, adopted and released by the Commission on December 12, 2012 ("NPRM").

I. INTRODUCTION

The comments filed in the instant proceeding reinforce the need to consider carefully the interplay between the promotion of spectrum sharing and small cell deployment that the Commission envisions in the 3550-3650 MHz band and the effect that this could have on the thousands of entities already providing wireless internet service in the 3650-3700 MHz band. In this context, the comments filed in the instant proceeding counsel against dragging the thousands of licensees currently operating in the 3650-3700 MHz band into what appears to be a long-term, experimental initiative to promote spectrum sharing and small cell deployment in the 3550-3650 MHz band. At this stage, too much is not known about how the envisioned small cell deployment would take place and how it would affect other users and other bands. With so much uncertainty and so many challenges involved in promoting small cell deployments in the 3550-3650 MHz band alone, the best course of action is for the Commission to focus on allowing small cell deployment to take hold in the 3550-3650 MHz band, monitor its

development, and conduct the necessary studies before contemplating any expansion to other bands where commercial operators are already present.

If the Commission nonetheless concludes that the benefits of combining the 3650-3700 MHz band and its current users with the very different technological and regulatory environment envisioned for the 3550-3650 MHz band are compelling, and if the Commission concludes that it can do so without affecting the rights of 3650-3700 MHz band incumbents, Neptuno respectfully submits that the proposal of the Wireless Internet Service Providers Association ("WISPA") appears to be the proposal that gets closer to the goal of protecting the ability of wireless internet service providers ("WISPs"), like Neptuno, to continue to operate as they do now in the 3650-3700 MHz band.

II. DISCUSSION

A. The Comments Filed In The Instant Proceeding Reinforce Neptuno's Concerns With The Commission's Proposal.

Many of the comments filed in the instant proceeding echoed some of the threshold concerns identified by Neptuno in its Comments. Neptuno expressed concern with the limited information available regarding the location and scope of the exclusion zones proposed in the NPRM.[1] The comments filed in the instant proceeding substantiate Neptuno's concerns. A notable majority of the commenters specifically warned the Commission about the potentially vast scope of the proposed exclusion zones, noting that they could end up prohibiting any operations in a significant portion of the populated territory of the United States.[2] And, as WISPA explained, exclusion zones would be unnecessary in the 3650-3700 MHz band in any

[1] *See* Comments of Neptuno Networks at 8.

[2] *See, e.g.*, Comments of Xchange Telecom, Inc.at 5-6; Comments of Consumer Electronics Association at 8-9; Comments of National Cable & Telecommunications Association at 3, 9-10; Comments of AT&T at 12-13; Comments of Allied Communications, LLC at 2-3, 8-9; Comments of Shared Spectrum Company 4-6; Comments of Qualcomm at iii, 16-17; Comments of Utilities Telecom Council, Edison Electric Institute and National Rural Electric at 12, 22; Comments of WhiteSpace Alliance at 5.

event given that military radar operations exist only in the lower 3550-3600 MHz segment of the band.[3] Plainly, the Commission not only needs to further study the need for any exclusion zones in its proposal, but it needs to better define the size and location of any such zones before any serious consideration is given to expanding exclusion zones to the 3650-3700 MHz band.

Neptuno also noted in its Comments that it did not appear that the development of small cell deployments in the 3650-3700 MHz band was compatible with the commercial broadband services, especially those based on WiMax technology, that are currently provided by incumbent 3650-3700 MHz licensees.[4] This concern is of particular importance to Neptuno, which operates in a high-density urban area. Various commenters confirmed the seriousness of these concerns. WISPA warned about the prospects of "harmful interference from subsequent GAA users" unless important modifications were made to the Commission's proposal.[5] KanOkla Communications, Inc., an entity that current operates in the 3650-3700 MHz band, pointed to the incompatibility between the WiMAX equipment used by many WISPs in the 3650-3700 MHz band and the systems and equipment that would be necessary under the Commission's proposed framework.[6] Other commenters expressed concern with the potential for interference from higher power operations, like those that are currently prevalent in the 3650-3700 MHz band, and the lower power operations envisioned by the Commission at the GAA tier.[7] Other commenters noted concerns with potential interference with incumbent operators in the C-band of the 3650-

[3] *See* Comments of WISPA at 14.
[4] *See* Comments of Neptuno Networks at 12
[5] Comments of WISPA at 11.
[6] *See* Comments of KanOkla Communications at 3.
[7] *See, e.g.*, Comments of the Utilities Telecom Council, the Edison Electric Institute, and National Rural Electric Cooperative Association at 17 (raising concerns with interference from and to higher power operations in the Priority Access tier); Comments of Ericsson at 15-16 (urging the Commission to further study the coexistence of the different users that would share the 3550-3700 MHz band under the NPRM's proposal).

3700 MHz band.[8] When taken together, these comments make plain that there are legitimate concerns with how (and whether) the extensive small cell deployment proposed by the Commission can be extended to the 3650-3700 MHz band without causing interference to incumbents in that band. It is likewise clear that, given the diversity of opinions and concerns as to this subject, the Commission is going to have to conduct additional studies (and provide additional details) before the consequences and likelihood of success of such expanding small cell deployment to the 3650-3700 MHz band can be assessed.

Finally, Neptuno expressed concern that the Commission's proposal would make it impossible for 3650-3700 MHz band operators like Neptuno to continue to operate as they do today and urged the Commission to adopt a proposal that did not affect the rights and ability to operate of these incumbents.[9] These concerns were echoed by various commenters. Some expressed the concerns generally,[10] but current 3650-3700 MHz band operators addressed the issue directly. KanOkla Communications, a current 3650-3700 MHz band operator, expressed concern with the "significant loss of investment and additional expenses due to the need for costly software and hardware upgrades" that would be required to implement the framework that the Commission proposed for the NPRM.[11] Xchange Telecom, another entity providing service in the 3650-3700 MHz band, explained that its current deployment was incompatible with the Commission's proposal.[12] WISPA, for its part, supported the Commission's proposal, but only if the Commission granted "Priority Access" to WISPs currently operating in the 3650-3700

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[8] *See* Comments of the National Associations of Broadcasters at 1-3 and Engineering Statement of Skjei Telecom at 2-4, submitted by the National Association of Broadcasters with its Comments; Comments of the Content Companies at 1-4; Comments of the Harris Corporation at 3-5; Comments of the Satellite Industry Association at 18-19; Comments of the Telecommunications Industry Association at 2.

[9] *See* Comments of Neptuno Networks at ii, 5, 12

[10] *See*, e.g., Comments of Telecommunications Industry Association at 2 (warning of "the potential for adverse impact on incumbent services" in the 3650-3700 MHz band)

[11] Comments of KanOkla Communications, Inc. at 3.

[12] *See* Xchange Telecom at 8.

MHz—a key component that is not part of the Commission's proposal, but that would be essential to any attempt to protect the ability of those WISPs to continue to operate as they do now.[13]

To address these concerns, some commenters proposed treating incumbent WISPs and other commercial wireless service providers in the 3650-3700 MHz band as "Priority Access" users in the three-tiered system proposed by the Commission in the NPRM.[14] Others proposed extending to the 3550-3650 MHz band the rules and licensing scheme that currently apply to the 3650-3700 MHz band.[15] And others, such as WISPA, proposed a more comprehensive regime incorporating these and other components to ensure that incumbents currently operating in the 3650-3700 MHz band are not affected by the Commission's proposal.[16] As discussed below, Neptuno believes that the problems and challenges involved in attempting to extend the Commission's small deployment proposal to the 3650-3700 MHz band are too complex and long-term in nature—and the unknowns too numerous—to attempt to address them now with what may be nothing but partial solutions that cannot anticipate the significant problems that may arise. In the end, however, the divergence in proposals from these entities should not distract from what is the undisputable common concern: that the Commission's proposal, as set forth in the NPRM, would very likely affect the ability of incumbents in the 3650-3700 MHz band to operate as they do today.

[13] *See* Comments of WISPA at 11.
[14] *See e.g.*, Comments of WISPA at 11; Comments of Cambium Network at 2; Comments of Ericsson at 14-15; Comments of PCIA at 5.
[15] *See, e.g.*, Comments of Xchange Telecom at 7; Comments of KanOkla Communications at 3.
[16] *See* Comments of WISPA at 11-15.

B. The Commission Should Focus On Spectrum Sharing And Small Cell Deployment In The 3550-3650 MHz Band

The comments filed in the instant proceeding tend to support the notion that the Commission would be better off focusing on spectrum sharing and small cell deployment in the 3550-3650 MHz band without having to deal with the additional complications and challenges involved in incorporating the regulatory and licensing regime of—and the thousands of entities currently operating in—the 3650-3700 MHz band. Neptuno urges the Commission to take this prudent course of action at this time.

There is no reason to think based on the Commission's NPRM or the comments filed in this proceeding that the 100 MHz of spectrum in the 3550-3650 MHz band that the Commission is proposing to designate for spectrum sharing and small cell deployment would be insufficient to promote the Commission's goals. It is clear, however, that the proliferation of small cell deployments that the Commission envisions comes with too many questions that are unanswered and necessarily will remain unanswered until these deployments actually take place in the field and the interactions and interference mitigation techniques are actually put to the test. Commenters like the Consumer Electronics Association and Mobile Future have correctly stressed how the Commission's proposal for the 3550-3650 MHz band should be viewed as a long-term initiative that counsels for proceeding carefully given the research, development, and testing that will be required.[17] Other commenters aptly stressed the need for more detailed discussions on operational questions and additional technical studies and testing for harmful interference,[18] and the need for additional study of questions regarding coexistence of users

[17] See Comments of Consumer Electronics Association at 3-4; Comments of Mobile Future at 1, 3-5.
[18] *See* Comments of Content Companies at 3-4; Comments of CTIA-The Wireless Association at 12-15; Comments of Alcatel-Lucent at 14; Comments of National Cable & Telecommunications Association at 1-2; Comments of AT&T at 13.

among different proposed tiers and the operation of the SAS on which the Commission's entire proposal depends.[19]

In short, there is too much that is not known about how the envisioned small cell deployment would take place, how the equipment and other technical details would work and interact, how new deployments would coexist with the different users that would operate in the band, how the proliferation of small cell deployments would affect contiguous bands or how (and whether) the dynamic shared access systems proposed by the Commission will work effectively to avoid interference problems. What is known, however, is that there will be a long period of experimentation and monitoring that will have to take place before these questions can be answered. This experimentation and monitoring will be challenging enough in the 3550-3650 MHz band, as the Commission's NPRM and the comments filed in this proceeding demonstrate. But it will be even more challenging if the complexities involved in attempting to integrate the 3650-3700 MHz and its thousands of existing commercial operators are added to the mix. Under these circumstances, the prudent course of action would be to limit this novel promotion of small cell deployments to the 3550-3650 MHz band and allow for sufficient time to monitor, observe, and study small cell deployments in that band before even contemplating adding the 3650-3700 MHz, with its thousands of commercial operators and FSS satellite providers, into the already complicated equation.

C. If The Commission Concludes That The Benefits Of Its Proposal Are Compelling And That The Proposed Integration Can Take Place Without Affecting The Operations Of 3650-3700 MHz Incumbents, WISPA's Proposal Comes Closest To Protecting The Ability Of Current 3650-3700 MHz Band Operators To Continue Operating.

If, notwithstanding the concerns enumerated by Neptuno and various other commenters, the Commission concludes that the benefits of combining the 3650-3700 MHz band and its

[19] *See* Comments of Ericsson at 9, 15-16; Comments of Comsearch at 11-12.

current users with the very different technological and regulatory environment envisioned for the 3550-3650 MHz band are compelling, and if the Commission concludes that it can do so without affecting the rights of 3650-3700 MHz band incumbents, Neptuno believes that only WISPA's proposal comes close to protecting the ability of those incumbent users to continue operating.

There are three fundamental aspects to WISPA's proposal that would help promote this goal and that should be incorporated by the Commission in any attempt to combine the 3550-3650 MHz and the 3650-3700 MHz band. First, WISPA's proposal recognizes the need to reduce exclusion zones and clarify that they would not be necessary in the 3650-3550 MHz band.[20] Because military radar operations exist only in the lower 3550-3600 MHz segments, there is no risk of interference with the operations of the current 3650-3700 MHz users, which means that there is no reason for any such exclusion zones to apply to those users currently operating in the 3650-3700 MHz band.

Second, and critically from Neptuno's perspective, WISPA's proposal recognizes the need to protect the existing operations of the current users of the 3650-3700 MHz band. With this in mind, and "in contrast to the Commission's suggestion that current 3650-3700 MHz licensees be reclassified as GAA users," WISPA recommends that existing 3650-3700 MHz licensees be grandfathered and granted Priority Access status.[21] In this regard, WISPA recognizes that the segregation may not be sufficient to eradicate the risks of "harmful interference from subsequent GAA users," which could easily occur "if a new GAA location was established in the SAS database before the existing ULS database is transitioned to the SAS."[22] Grandfathering of current 3650-3700 MHz licensees is therefore an essential component of

[20] *See* Comments of WISPA at 8.
[21] *See* Id. at 11 (footnotes omitted).
[22] *See* Id. at 11.

WISPA's proposed scheme and should be an essential component of any attempt by the Commission to combine the 3550-3650 MHz band and the 3650-3700 MHz band.

Finally, WISPA's proposal includes a significant transition period.[23] If the Commission's proposal is adopted, it would entail the deployment of new equipment or the transition to a geolocation database, neither of which can happen overnight. Comments of WISPA at 20. Establishing a reasonable transition period with conversion procedures in place is essential under these circumstances.

These key components of WISPA's are an essential first step to any attempt to integrate the 3550-3650 MHz band with the 3650-3700 MHz band. Neptuno still would prefer that the Commission proceed with spectrum sharing and small cell deployment in the 3550-3650 MHz before attempting to integrate the very different 3650-3700 MHz into what would be a new and experimental regime. If, however, the Commission deems it necessary to combine the 3550-3650 MHz band and the 3650-3700 MHz band at this juncture, WISPA's recommendations are undoubtedly the ones that come closest to protecting the ability of current 3650-3700 MHz band users to continue operating and should be part of any such attempt at integration.

III. CONCLUSION

Neptuno strongly urges the Commission to deal with the challenges of promoting small cell deployments in the 3550-3650 MHz before taking upon itself the additional burden of having to combine two different regulatory and licensing regimes and forcing different technologies and users to coexist when there are so many unanswered questions to real challenges involved in combining the 3550-3650 MHz band and the 3650-3700 MHz band.

[23] *See* Id. at 20-21.

Respectfully submitted,

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